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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/052,468 | 01/23/2002 | Armin Diez | HOG610 | 6440 |

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EXAMINER

KYLE, MICHAEL J

ART UNIT

PAPER NUMBER

3676

DATE MAILED: 03/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/052,468

Applicant(s)

DIEZ ET AL.

Examiner

Michael J Kyle

Art Unit

3676

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-19 and 21-25 is/are rejected.
- 7) ☒ Claim(s) 20 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 January 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. Figure 3 of the drawings is objected to for not clearly showing the features of the invention as claimed. The dimension lines showing the width of (F) in figure 3 extend into gasket and make it appear as though there is an aperture in the gasket, rather than showing the distance between elevations. In addition, the dimension lines showing the diameter (G) of the elevation also extend into the gasket, making it appear as though there is a discontinuity in the gasket.

Claim Objections

2. Claim 1 is objected to because it is unclear what the “circular arcs” are in the fourth line of part (b).

3. Claim 2 is objected to because the third line of the claim is unclear to the examiner. The examiner suggests adding language or punctuation to clarify the claim, specifically in line 3 and lines 4-5. Furthermore, it is unclear what the “contact zone” is.

4. Claim 5 is objected to because of terminology “at least almost inelastic” in line 2 of the claim. The examiner suggesting re-phrasing this to more clearly describe the claimed subject matter.

5. Claim 6 is objected to because of the terminology “at least almost no plastic” in line 2 of the claim. The examiner suggesting re-phrasing this to more clearly describe the claimed subject matter.

Art Unit: 3676

6. Claim 17 is objected to because they include reference characters which are not enclosed within parentheses.

7. Reference characters corresponding to elements recited in the detailed description of the drawings and used in conjunction with the recitation of the same element or group of elements in the claims should be enclosed within parentheses so as to avoid confusion with other numbers or characters which may appear in the claims. See MPEP § 608.01(m).

8. Claim 19 is objected to because of the limitation “knob-like”. The phrase “like” renders the claim indefinite because the claim includes elements not actually disclosed (those encompassed by “like”), thereby rendering the scope of the claim unascertainable.

9. Claim 21 is objected to because of the phrase “at least one bead” in line 2 of the claim. It is unclear if this is the same “at least one bead” as disclosed in claim 1. As best understood by the examiner, it is not.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1, and 15-19 are rejected under 35 U.S.C. 102(b) as being anticipated by European Patent 0 470 790 (EPO ‘790). EPO ‘790 discloses a cylinder head gasket with an at least substantially metallic gasket plate comprising at least one sheet metal layer and having at least one opening (20) surrounded by at least one bead (C22a) formed in a sheet metal layer of the

Art Unit: 3676

gasket plate and being elastically deformable in height, wherein for delimiting such deformation of the bead, the sheet metal layer is provided with at least one delimiting device (C23a) having at least one deformation in the sheet metal layer such that in sections through the sheet metal layer along circular cylindrical surfaces coaxial with the combustion chamber opening, the delimiting device respectively comprises a row of discrete elevations following one another in a circumferential direction (C23a), and located opposite each elevation, a discrete depression corresponding in shape to the shape of the elevation associated therewith, the elevations joined to one another by the sheet metal of the at least one sheet metal layer. EPO '790 also discloses the total area occupied by all of the elevations is at least equal to half of the total area occupied by the delimiting device, and the shape of the elevations differ from the shape of circular arcs at least partly surrounding the combustion chamber opening. Furthermore, EPO '790 discloses the one sheet metal layer is provided with at least one deformation (C23a), the total thickness of the sheet metal layer is greater than the thickness of the un-deformed sheet metal.

12. With respect to claims 15-17, EPO '790 discloses the delimiting device forms a two dimensional pattern of discrete elevations, the elevations form a regular pattern, and the spacings (F) between neighboring elevations are smaller than the maximum diameters (G) of the elevations.

13. With respect to claims 18-19, EPO '970 discloses that all of the elevations are of approximately the same design and the elevations are of a knob design.

Art Unit: 3676

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. Claims 1-19, 23 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Udagawa (U.S. Patent No. 6,250,645) (Udagawa '645) in view of EPO '790. Udagawa '645 discloses a cylinder head gasket with an at least substantially metallic gasket plate comprising at least one sheet metal layer (D10) and having at least one combustion chamber opening (Hc) surrounded by at least one bead (D13) formed in a sheet metal layer of the gasket plate and being elastically deformable in height, wherein for delimiting such deformation of the bead, the sheet metal layer is provided with at least one delimiting device (D11, D12) having at least one deformation in the sheet metal layer such that in sections through the sheet metal layer along circular cylindrical surfaces coaxial with the combustion chamber opening, the delimiting device respectively comprises elevated rows (D12), and located opposite each elevation, a discrete depression (D11) corresponding in shape to the shape of the elevation associated therewith, the elevations joined to one another by the sheet metal of the at least one sheet metal layer. Udagawa '645 also discloses the total area occupied by all of the elevations is at least equal to half of the total area occupied by the delimiting device, and the shape of the elevations differ from the shape of circular arcs at least partly surrounding the combustion chamber opening. Furthermore, Udagawa '645 discloses the one sheet metal layer is provided with at least one deformation (D11, D12), the total thickness of the sheet metal layer is greater than the thickness

Art Unit: 3676

of the un-deformed sheet metal. Udagawa '645 does not disclose a row of discrete elevations following one another in a circumferential direction.

16. EPO '790 teaches a row of discrete elevations (C23) following one another in a circumferential direction in order to provide an insulating air layer between plates. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Udagawa '645 as taught by EPO '790 in order to provide an air insulating layer.

17. With respect to claim 2, Udagawa '645 discloses sections through the sheet metal layer along circular cylindrical surfaces coaxial with the combustion chamber opening the crest of the elevations (D12) to be pressed against a neighboring sealing surface when the gasket is installed form with this sealing surface a contact zone which encloses the combustion chamber opening but is interrupted in a circumferential direction of the combustion chamber opening.

18. With respect to claims 3-5, Udagawa '645 discloses the crests of the elevations extend approximately parallel to the plane of the sheet metal layer, the elevations have an approximately U-shaped cross section in section through the sheet metal layer along circular cylindrical surfaces coaxial with the combustion chamber opening, and that the elevations are at least almost inelastic under pressure forces exerted on the elevations during operation of the engine (after deformation through the elastic region).

19. With respect to claims 6-8, Udagawa '645 discloses the elevations have at least almost no plastic properties (when initially compressed) under the pressure forces exerted on the elevations during the operation of the engine, the material of the sheet metal layer in the area of the elevations is cold worked by deformation up to almost the breaking limit, and the elevations lie close to one another with at least almost no spacing between them.

Art Unit: 3676

20. With respect to claims 9-11, Udagawa '645 discloses the spring rate of the delimiting device, measured perpendicularly to the sheet metal layer, is greater than that of the neighboring bead (based on the different geometry of the delimiting device D11, D12, compared to the bead D13) all around the combustion chamber opening, the total thickness of the sheet metal layer in the area of the delimiting device is smaller than in the area of the neighboring bead all around the combustion chamber opening (figure 6), and a device for delimiting the deformation is provided for each combustion chamber opening (figure 1).

21. With respect to claims 12-14, Udagawa '645 discloses the delimiting device is arranged radially within the neighboring bead (figures 4-7), only a single device for delimiting the deformation is provided for each combustion chamber (the device consisting of all of the elevated portions shown in figure 5), and the bead (D13) lying close to the delimiting device is of circular design (figure 1).

22. With respect to claims 15-17, Udagawa '645 discloses the delimiting device forms a two-dimensional pattern of discrete elevations and the elevations form a regular pattern. EPO '790 teaches the sheet metal layer spacings (F) between neighboring elevations are smaller than the maximum diameters (G) of the elevations.

23. With respect to claims 18-19, Udagawa '645 discloses all elevations (D12) are of approximately the same design, and EPO '970 teaches the elevations are of a knob design.

24. With respect to claim 23, Udagawa '645 discloses the elevations are formed by a ring of beads which encloses the combustion chamber opening, the beads extending approximately in a radial direction with respect to the combustion chamber opening.

Art Unit: 3676

25. Claim 25 recites in process limitation in an article claim, therefore, these process limitations are given little patentable weight. In addition, Udagawa '645 discloses the elevations are first produced with a larger height than their final and are then reduced to their final height by such a partial reverse deformation of the sheet metal layer that their cross section in circular cylindrical surfaces coaxial with the combustion chamber opening is approximately rectangular or trapezoidal. This could be accomplished through stamping.

26. Claims 1, 21, 22, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Udagawa (U.S. Patent No. 6,250,645) (Udagawa '645) in view of Udagawa (U.S. Patent No. 6,036,195) (Udagawa '195). Udagawa '645 recites all of the limitations of claim 1 as described above, except for a row of discrete elevations following one another in a circumferential direction.

27. Udagawa '195 teaches a row of discrete elevations (B15) following one another in a circumferential direction to support the tightening pressure applied to the combustion chamber (Hc). Udagawa '195 discloses the inner bead may be a corrugated bead (column 2, line 47). The examiner considers a corrugated bead to teach a row of discrete elevations following one another in a circumferential direction because if the bead is followed circumferentially around the combustion chamber, at a constant radius from the center of the combustion chamber, there will appear to be a row of discrete elevations. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Udagawa '645 as taught by Udagawa '195 to support the tightening pressure applied to the combustion chamber.

28. With respect to claim 21, Udagawa '195 teaches the elevations (B15) are formed by at least one bead which surrounds the combustion chamber opening in at least almost closed

Art Unit: 3676

configuration and forms over at least part of its length an at least almost complete meander extending in a circumferential direction. Udagawa '195 also teaches the device for delimiting deformation is formed by a single bead.

29. With respect to claim 24, Udagawa '645 discloses a cylinder head gasket with a metallic gasket plate comprising one metal sheet layer and having several combustion chamber openings (Hc, figure 1), each being surrounded by at least one first bead (D13) formed in a sheet metal layer of the gasket plate and having a spring rate so as to be elastically deformable in height wherein for delimiting the elastic deformation of the first bead, at least one delimiting device (D11, D12) is associated with each of the first beads, the delimiting device is associated with each of the first beads, the delimiting device being close to the respective first bead, surrounding the respective combustion chamber opening and being obtained by deformation of a sheet metal layer of the gasket plate such that the delimiting device (D11, D12) is formed by at least one second bead of the deformed metal layer, the second bead having a spring rate and surrounding the associated combustion chamber opening completely and. Udagawa '645 also discloses the spring rate of the second bead is greater than the spring rate of the associated first bead when measured perpendicularly to the gasket, the second bead (D12) is disposed between the associated combustion chamber opening (Hc) and the associated first bead (D13) and the height of the second bead is selected so as to allow an elastic deformation of the associated first bead. Udagawa '645 further discloses the total area occupied by the second bead is at least equal to half of the total area occupied by the delimiting device.

Art Unit: 3676

30. Udagawa '645 does not disclose the second bead forming over part of the length of the second bead a complete meander extending in a circumferential direction of the chamber opening.

31. Udagawa '195 teaches the second bead forming over part of the length of the second bead a complete meander extending in a circumferential direction of the chamber opening to support the tightening pressure applied to the combustion chamber (Hc). Udagawa '195 discloses the inner bead (B15) may be a corrugated bead (column 2, line 47). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Udagawa '645 as taught by Udagawa '195 to support the tightening pressure applied to the combustion chamber.

Allowable Subject Matter

32. Claim 20 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

33. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

34. The following references are cited to further show the state of the art with respect to cylinder head gasket with multiple beads: Inamura and Miyaoh.

Art Unit: 3676

35. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J Kyle whose telephone number is 703-305-3614. The examiner can normally be reached on Monday - Friday, 8:30 am - 5:00 pm.

36. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Knight can be reached on 703-308-3179. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9326 for regular communications and 703-872-9327 for After Final communications.

37. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-2168.

mk
March 7, 2003


Anthony Knight
Supervisory Patent Examiner
Tech Center 3600